REMARKS

The present invention is a method of operation of a mobile device and a mobile device each of which are in a system including a plurality of transmitters which transmit from at least one of the transmitters first and second complex sequences respectively from two especially diverse antennas of at least one transmitter. A method of operation of a mobile device in accordance with an embodiment of the invention includes modulating first and second complex sequences to produce demodulated complex of first and second sequences; detecting the demodulated first and second complex sequences to produce detected complex first and second sequences by multiplying respectively the demodulated first and second complex sequences with complex conjugates thereof; averaging the function of the complex detected first and second sequences to produce an average function; and processing the average function to detect a time, relative to a system time reference, of at least one peak therein resultant from the transmission of the first and second complex sequences.

The Examiner's indication of claims 7 and 9-33, 36 and 39-57 containing patentable subject matter is noted with appreciation.

Claims 1, 2, 34 and 35 stand rejected under 35 U.S.C. §103 as being unpatentable over U.S. Publication 2003/0147456 (Kumura) in view of United States Patent 6,778,591 (Sato). These grounds of rejection are traversed for the following reasons.

The Examiner correctly observes that Kumura does not disclose averaging a function of complex first and second detected sequences to produce an average

function and processing the average function to detect a time, relative to a system time reference of at least one peak therein resultant from the transmission of the first and second complex sequences. Kumura discloses a frequency offset estimator which functions to correct for insufficient high frequency stability between a transmitter and a receiver as discussed in paragraph [0002] of the Background Art in Kumura. As may be seen from Figs. 1, 2, 4, 5, and 6 of Kumura, multiplying of a symbol sequence 1 by a known complex symbol sequence 2 as, for example, illustrated in Figs. 1 and 2, is utilized to produce a frequency offset estimate 8 for correcting the frequency drift between the oscillators in the transmitter and the receiver. It is therefore seen that the multiplying first and second complex sequences by a known complex symbol sequence to remove a symbol information component as discussed in paragraph [0027], and as referred to in paragraph [0045], is for a purpose totally unrelated to the subject matter of independent claims 1 and 34 which recite a processor responsive to an averaged function or processing an average function to detect a time, relative to a system time reference of at least one peak therein resultant from the transmission of the first and second complex sequences. There is no utilization of detected peaks by the Kumura system for producing the frequency offset.

The Examiner has cited Saito et al for disclosing an averaging function 204. However, as is described in column 10, the averaging units 204_1 and 204_2 are cross power spectrum calculating units which calculate products of two received signals Fast Fourier transformed by Fast Fourier transformers 201_1 and 201_2 and a complex conjugate of the referenced signal stored in reference signal storage unit 203 to thereby calculate cross power spectra between received signal rxd and received

spread code rxcd which is the predetermined code sequence as described in column 10, lines 3-18. As may be seen, the aforementioned averaging is part of the cross correlation coefficient calculating unit 104 of Fig. 1.

The cross power spectrum averaging unit 205_1 and 205_2 average the cross power spectra calculated by cross spectrum power calculating units 204_1 and 204_2 for each FFT window respectively. The peak detector 106 of Fig. 1 detects one peak or a plurality of peaks from the cross-correlation coefficient averaged by cross-correlation coefficient averaging unit 105 and outputs a timing at each peak as a path timing which is applied to despreading unit 107 which is applied to the rake receiver 108 which synchronously detects the spread received signal using a pilot signal as a reference signal. See column 7, lines 43-67.

It is submitted that a person of ordinary skill in the art would not be motivated to combine the teachings of Kumura with Saito et al except by impermissible hindsight. The objective of Kumura is to correct for frequency offset which is non-analogous art regarding the claimed processing of an average function to detect a time, relative to a system time reference, of at least one peak therein resultant from the transmission of the first and second complex sequences as recited in independent claims 1 and 34.

Moreover, the Examiner has not suggested a motivation for or how a person of ordinary skill in the art would even consider combining a frequency offset estimator with Saito et al's path search circuit dividing a received signal into a plurality of FFT windows to reduce arithmetic operation processes for cross correlation coefficients. It is submitted that the Examiner is engaging in impermissible hindsight.

If the Examiner persists in the stated grounds of rejection, it is requested that he point on the record how the averaging taught by Saito et al is analogous to the frequency offset estimator of Kumura. As the Examiner is aware, analogous art must be either be solving the same problem or relate to the same field of endeavor. It is submitted that a frequency offset estimator is a distinct and different technology then a path search circuit as disclosed by Saito et al. The only reason why a person of ordinary skill in the art would be led to modify the teachings of Kumura with Saito et al would be by impermissible hindsight.

Claims 3, 8, 37, and 38 stand rejected under 35 U.S.C. §103 as being unpatentable over Kumura and Saito et al further in view of U.S. Publication 2003/0123407 (Arimitsu). These grounds of rejection are traversed for the following reasons. Arimitsu does not cure the deficiencies noted above with respect to the combination of Kumura and Saito et al.

Claims 4 and 5 stand rejected under 35 U.S.C. §103 as being unpatentable over Kumura and Saito et al further in view of United States Patent 6,389,003 (Barroso). These grounds of rejection are traversed for the following reasons.

First, Barroso does not cure the deficiencies noted above with respect to Kumura and Saito et al. Moreover, it is submitted that Barroso is not analogous art to Kumura and Saito et al. It is noted that Barroso pertains to a solution of a problem of false positives in frame synchronization and telecommunications systems involving generating a separate channel estimate based on non-SW (all -1) bits of a pilot sequence. This subject matter has nothing to do with Kumura and Saito et al and would not suggest modification of Kumura and Saito et al to arrive at the subject matter of claims 4 and 5 except by impermissible hindsight.

Claim 6 stands rejected under 35 U.S.C. §103 as being unpatentable over Kumura and Saito et al and Arimitsu further in view of Barroso. Claim 6 is patentable for the same reasons set forth above with respect to claims 4 and 5 pertaining to the deficiencies of Barroso.

In view of the foregoing amendments and remarks, it is submitted that each of the claims in the application is in condition for allowance. Accordingly, early allowance thereof is respectfully requested.

To the extent necessary, Applicants petition for an extension of time under 37 C.F.R. §1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 01-2135 (0173.40109X00) and please credit any excess fees to such Deposit Account.

Respectfully submitted,

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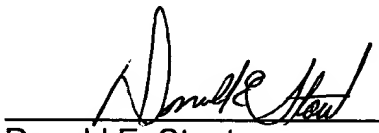

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Attachments

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